countries attend the United Nations Earth Summit in Rio de Janeiro. **1993** EPA reports secondhand smoke poses a serious recycling triples from 7% in 1970 to nearly 22% in 1993. **1994** The American bald eagle is upgraded from an endangered to

HEALTHY ECOSYSTEMS

The Dynamic Interaction of Habitat and People

When explorer John Smith arrived at the Chesapeake Bay in 1607, forests covered 95 percent of the land, sweeping in an ocean of green beyond the western mountains. Settlement reduced this great primordial forest — the home of all that lived in its life-sustaining embrace — by 60 percent by the late 1800s.

Today, forests once again are the dominant land cover of the Bay region, covering 59 percent of the Chesapeake watershed. Yet we are losing forests at the rate of 100 acres per day to sprawl and development.

As Smith sailed the bay, huge oyster reefs filtered all the water in the Chesapeake Bay in less than a week, a process that now takes a year for the reduced oyster population that remains due to pollution and overfishing. In response to public demands EPA and Bay states have developed more than a dozen protected artificial reefs. Diseases still threaten mature oysters, but Maryland's 1997 new young osyters were the second highest since monitoring began in 1939. Between 1988 and 1997, industries have reduced toxic releases into the bay by 67 percent. Some 3,600 species of plants and animals live in the Chesapeake ecosystem. Striped bass are back in record numbers. Streams have been unblocked and fish passages constructed to restore migratory spawning for shad and herring, an important food source for many birds and fish. Unfortunately, the harvest of blue crabs and oysters, once plentiful and economically significant, is down dramatically from 20 years ago because of overharvesting and disease. But restoration efforts have begun.

Healthy ecosystems are vitally important to man. Man both threatens and restores the ecosystems of the mid-Atlantic states, from extensive shorelines, wetlands and coastal plains to the rolling foothills of the Piedmont Plateau and the Appalachian Mountains. Forests help filter and clean the air while wetlands filter and clean water. Both are disappearing.

Where urban sprawl and changing land use have destroyed habitat and wetlands, Maryland has developed a model "smart growth" policy that deters development that would have adverse environmental effects. And many states are buying land to preserve farmland and open space and retard sprawl. Urban runoff and farm

health risk to nonsmokers. EPA implements strategy governing hazardous waste incinerators and industrial furnaces. Curbside threatened species. President Clinton orders government agencies to make environmental justice part of their mission.

Courtesy of S. C. Delaney/EPA

In Anocostia brownfields program, in a Washington D.C. neighborhood, renewed recreational use is one of the goals of the river cleanup project. The "Day on the River Program" is one program designed to give community youths access to the river.

manure pollute the bays and estuaries with excess nutrients — nitrogen and phosphorus — triggering algae blooms that block sunlight needed to grow aquatic grasses, an important habitat for fish and shellfish. But as nutrient pollution has been perceived as a serious problem, the growth of underwater grasses that provide food for waterfowl and habitat for fish and crabs has rebounded since the 1980s.

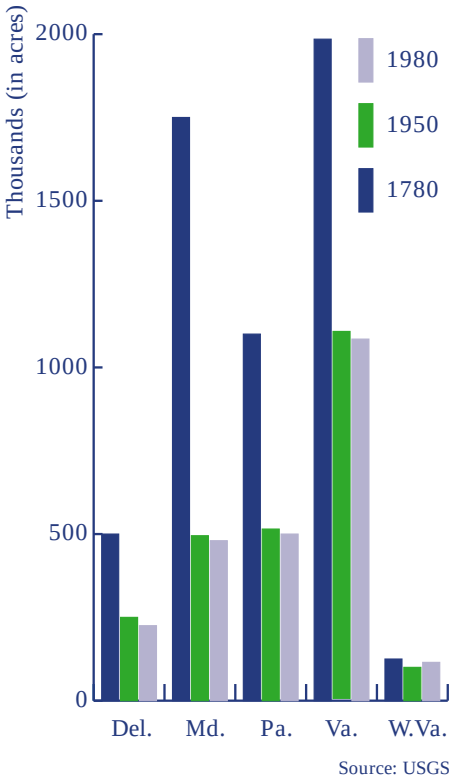
Today the Chesapeake Bay is one of the most closely monitored bodies of water in the world.

Chesapeake Bay Watershed

The Bay receives about half of its freshwater flow from the Susquehanna River, followed by flow from the Potomac and James rivers. The rest drains from the thousands of creeks and streams that crisscross the Bay's 64,000 square mile watershed. The rivers and main Bay are affected by the natural tidal flow from the Atlantic Ocean. The Bay program to restore and protect the Chesapeake Bay is a partnership between EPA, the Chesapeake Bay Commission, and the states of Maryland, Pennsylvania, Virginia, and the District of Columbia.

Pollution has taken its toll on the region's ecosystems, but by working with other federal agencies, state and local governments, industry, farmers, environmentalists, conservation associations and citizen groups, EPA and the Chesapeake Bay Program have achieved significant results. The Bay Program's most important goal of reducing by 40 percent

Region III's Wetlands Loss

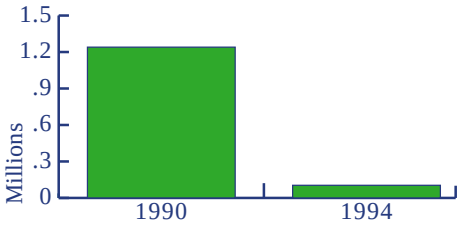


Source: USGS

As wetlands disappear, we lose their many benefits including nursery and habitat areas for many threatened and endangered species, flood control, water purification and recreational opportunities. Since 1780, 50 percent of the region's wetlands have disappeared.

Superfund cleanups accelerated, resulting in as many cleanups in 12 months as were completed in program's first decade. them to productive use. List of toxic chemicals reported to public under community right-to-know law doubles. 1995 Region

Loss of Horseshoe Crabs



Even with a serious decline in numbers, the Delaware estuary is home to the world's largest population of horseshoe crabs. This unique marine organism is an important food source of migratory birds and also indispensable in medical research in preventing bacterial contamination of medicine. This chart dramatically illustrated our need to preserve balance in the way we interact with our environment.

controllable nutrients entering the bay by 2000 will be met for phosphorus. The nitrogen goal, however, can be met only if current reduction efforts are accelerated. Scientists estimate that 21 percent of all the nitrogen in the bay comes from the air.

The Delaware River and Estuaries

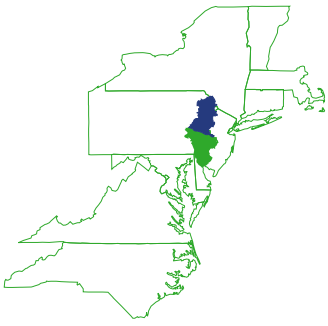
Another significant mid-Atlantic estuary is the Delaware River and its related inland bays. In the 1940s and 1950s, the Delaware was acidic and black, bacterial levels were very high and the stench, which overcame many riverside workers, could be smelled by people in planes 5,000 feet high. In what was once the best fishery on the east coast, the fish had virtually disappeared. Hulls of ships blackened. These conditions persisted until the 1970s.

With help from EPA funding, three major wastewater treatment plants were constructed. In response to new regulations, industries upgraded or installed new equipment to reduce pollutants being discharged from their facilities. Today, along what was once the worst stretch of the Delaware, lie marinas, condominiums, parks, amphitheaters, restaurants and a state aquarium. The striped bass and shad have returned. More still needs to be done, especially in controlling stormwater runoff from streets, homes and businesses of pollutants such as pesticides, gasoline, antifreeze and salt.

Courtesy of S. C. Delaney/EPA

Delaware Estuary Watershed

Delaware River Drainage Basin



Brownfields program launched, with grants to communities to revitalize abandoned, contaminated inner-city sites and return

III archives more than 3,000 sites of concern, removing liability barriers and encouraging the redevelopment and reuse of these